

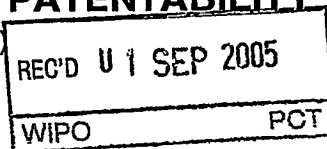
PATENT COOPERATION TREATY


PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)



Applicant's or agent's file reference 103.0009PCT		FOR FURTHER ACTION		See Form PCT/IPEA/416
International application No. PCT/IB2004/002639		International filing date (day/month/year) 11.08.2004	Priority date (day/month/year) 10.10.2003	
International Patent Classification (IPC) or national classification and IPC E21B47/06, E21B47/10				
Applicant SCHLUMBERGER SURENCO SA				
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36:</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input type="checkbox"/> sent to the applicant and to the International Bureau a total of sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>				
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>				
Date of submission of the demand 15.03.2005		Date of completion of this report 30.08.2005		
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized Officer Morrish, S Telephone No. +49 89 2399-		



**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/IB2004/002639

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

Description, Pages

1-28 as originally filed

Claims, Numbers

1-36 as originally filed

Drawings, Sheets

1/6-6/6 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT
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International application No.
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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	2-18,22,26-36
	No: Claims	1,19-21,23-25
Inventive step (IS)	Yes: Claims	2-18,22,26-36
	No: Claims	1,19-21,23-25
Industrial applicability (IA)	Yes: Claims	1-36
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

V - Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

V1.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of **claim 1** is not new in the sense of Article 33(2) PCT.

Document **D1: US-A-3 913 398** discloses (see in particular columns 2 and 3) a method of determining production rates in a well comprising:

determining a model of temperature as a function of zonal rates in the well;
measuring temperatures at a plurality of locations in the well; and
inverting the measured temperatures by applying the model to determine an allocation of production rates from different producing zones in the well.

V1.2 The combination of the features of dependent **claims 2 to 11** is neither known from, nor rendered obvious by, the available prior art for the following reasons. D1 discloses a method which is applicable to production wells but which is specifically useful in the determination of flow rates in gas-producing wells where large anomalies occur from high temperature-pressure gases flowing into cooler wells. The feature required by claim 2 of the current application is that of a single-phase liquid producing well, which in this case would not be rendered obvious by D1. Other documents of the prior art, for example **D2: US-A-2001/20675**, measure flow-rates directly using, in this particular case, fibre-optic sensors. These direct measurements are then used to produce a model which can be additionally adapted but is then utilised in a production string to control a pump or such-like. In **D3: US-A-4 676 664**, the temperature log is measured directly off the sea-bed floor, not in a producing well.

It appears therefore that in light of the disclosures made in the available prior art, the subject-matter of **claims 2 to 11** is new and inventive and as such, said claims meet the corresponding requirements of the PCT with respect to novelty and inventive step.

V1.3 For the reasons given above, it appears that the subject-matter of **claim 12** is new and inventive as it refers to a method of determining flow rates in a well whereby the temperature measurements are made at a plurality of points along the well having a plurality of well zones and a plurality of liquid phases. As **claims 13 to 18** are dependent on claim 12, said claims also meet the requirements of the PCT

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(SEPARATE SHEET)**

International application No.

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with respect to novelty and inventive step.

V1.4 However, the subject-matter of **claims 19 to 21 and 23 to 25** appears to be anticipated by the disclosure in D1 and therefore said claims are not new: However, for the reasons given in V1.2 above, as D1 refers specifically to a limited flow gas phase well, the subject-matter of **claim 22** is new and inventive and meets the requirements of the PCT with respect to novelty and inventive step.

V1.5 Also for the reasons given above, it appears that the subject-matter of **claims 26 to 36** is new and inventive. None of the documents of the available prior art disclose a method as specified in claim 26 and related claims 27 to 33 nor do they disclose the system of claim 34 and related claims 35 and 36.